

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-240005

(43)Date of publication of application : 16.09.1997

(51)Int.Cl.

B41J 2/175

(21)Application number : 08-079416

(71)Applicant : SEIKO EPSON CORP

(22)Date of filing : 08.03.1996

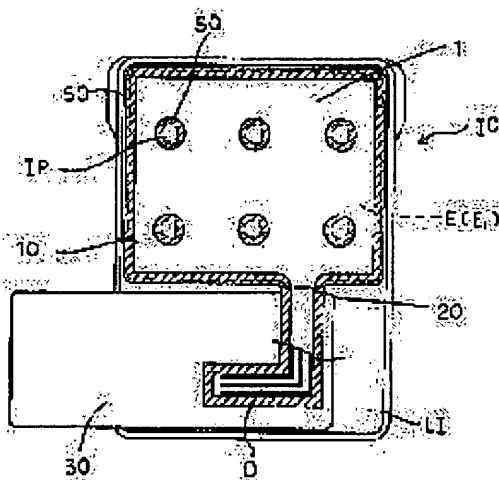
(72)Inventor : KANETANI MUNEHIDE  
MIYAZAWA HISASHI

(54) INK CARTRIDGE AND SEALING SHEET FOR PRINTER OR THE LIKE

(57)Abstract:

PROBLEM TO BE SOLVED: To make an used ink cartridge refillable without stripping off a used seal main body by attaching a reusable seal on the lid of the used ink cartridge having a seal left unremoved in such a manner that an ink injection hole and a ventilating groove.

SOLUTION: The main body E1 of a seal E remains unremoved on the lid L1 of a used ink cartridge 1C in such a manner that the main body E1 of the seal E covers an ink injection hole 1P. The main body E1 of the seal E is completely covered by the main part 10 which has a slightly larger configuration size than the main body E1 and also has an auxiliary part 30 connected to the main body E1 through a break line part 20. Further, it is possible to attach a sealing sheet 1 to the surface of the lid L1 by making not only the ink injection holes 1P but also a ventilating groove D airtight with an encircling first adhesive part 50 in such a manner that the groove D is covered by the auxiliary part 30. Thus it is possible to



rapidly and easily refill the ink cartridge 1C.

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## LEGAL STATUS

[Date of request for examination] 20.04.2001

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3449107

[Date of registration] 11.07.2003

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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3. In the drawings, any words are not translated.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The ink cartridge in the printer which stuck the closure sheet for playback on the lid so that it might be the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, the closure sheet which covers the field of said letter slot of meandering in said ink injected hole list, and remains on a lid might be covered and an atmospheric-air free passage slot could be closed in an ink injected hole list at least.

[Claim 2] The ink cartridge in the printer according to claim 1 whose closure of said letter slot of meandering said closure sheet for playback enabled.

[Claim 3] Claim 1 or 2 written ink cartridge from which said closure sheet for playback continued by the fracture section and which it consisted of possible [ attachment on a lid ] in the principal piece made into a dimension which covers the ink injected hole and the letter slot of meandering on the lid in the shape of the closure, and the subsection which was made into a dimension to which said atmospheric-air free passage slot is covered in the shape of the closure, stripped off, and was made possible.

[Claim 4] The ink cartridge according to claim 1 or 2 which consisted of a principal piece which can stick on a lid so that have the transparent window section which makes only the atmospheric-air free passage slot where said closure sheet for playback follows the letter slot of meandering formed in said lid expose and the periphery side of a lid may close, and the subsection which stuck on said principal piece, lengthened, removed so that said transparent window section may be covered and said atmospheric-air free passage slot may close, and carried out as it is possible.

[Claim 5] While establishing the hole for ink restoration in the location which said closure sheet for playback adjusts in the ink injected hole established to the lid The ink cartridge according to claim 1 or 2 which consisted of the 1st sheet section which was equipped with the transparent window section which makes only said atmospheric-air free passage slot expose, and was constituted possible [ attachment on a lid ], and the 2nd sheet section in which a part for said hole for ink restoration and said transparent window is stuck by the 1st sheet section of the method above of a wrap, and it deals.

[Claim 6] The ink cartridge according to claim 5 which the 1st sheet section of said closure sheet for playback is formed with plastic material, and it comes to stick on a lid beforehand.

[Claim 7] An ink cartridge claim 1 constituted so that it might differ from the appearance of the used closure sheet with which the appearance of said closure sheet for playback remains on a lid, 2, or given in four.

[Claim 8] The ink cartridge according to claim 1 which the color of said closure sheet for playback consisted of in the shape of unique to the color of the used closure sheet which remains

on a lid.

[Claim 9] The ink cartridge according to claim 1 or 7 constituted so that the appearance of said closure sheet for playback might be larger than the appearance of the used closure sheet which remains on a lid and might cover this residual sheet completely.

[Claim 10] The closure sheet for ink cartridges in the printer which can stick on a lid so that the closure sheet which is a closure sheet which enabled regeneration of the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, covers the field of said letter slot of meandering in said ink injected-hole list, and remains on a lid covers and an atmospheric-air free passage slot may close in an ink injected-hole list at least.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention belongs to the technical field of the ink cartridge whose reuse was re-filled up with ink fresh to used ink cartridges, such as an ink jet printer, and was enabled.

[0002]

[Description of the Prior Art] Various kinds of originality and creativity for the importance of carrying out disposal of the used ink cartridge immediately in this kind of technical field not only being improving also from a viewpoint of a deployment of a resource, but it collecting the ink cartridges concerned from becoming the factor of environmental pollution, and it aiming at reuse being recognized widely, being conventionally, re-filled up with ink, and making reuse possible are proposed.

[0003] By the way, in the conventional ink cartridge, since holding so that air bubbles may not mix by the shape of a high airtight, in order to prevent leakage of the built-in ink and evaporation and to maintain whenever [ necessary degassing ] secures the quality of printed character by the printer, it is indispensable.

[0004] As an example of invention proposed in order to respond to the aforementioned request, Japanese Patent Application No. No. 119289 [ seven to ] is mentioned.

[0005] If it is in invention of this point \*\*, the ink inlet B established to Lid A as shown in drawing 7 thru/or drawing 9 is made to follow the atmospheric-air free passage slot D through the winding slot C. As the front face is covered with Seal E, ink is made to hold in the shape of an airtight, and in said seal E, it is a body E1. The continuing constriction section E2 It minds and is the tongue-shaped piece E3 which can exfoliate. It considers as the configuration formed successively.

[0006] therefore, in order to be reuse at the time of all being consumed in the ink in the ink cartridge IC concerned Body E1 of the seal E which remains on Lid A After making it exfoliate from Lid A (refer to drawing 8 ), Fresh ink is poured in into an ink cartridge IC with the ink impregnation implement IS from the ink injected hole B. Although re-restoration processing will be performed with the help of an extract operation of the ink from the extract needle IE, the intact seal E will be stuck on Lid A (refer to drawing 9 ) and reuse of an ink cartridge IC will be aimed at if the need is accepted If in charge of the use, it is the aforementioned tongue-shaped piece E3. It was made to exfoliate, the ink from an ink cartridge IC can be supplied to a printer,

and ink was that in which it is always held in the shape of an airtight, and deals.

[0007]

[Problem(s) to be Solved by the Invention] If it is in invention of point \*\* like the above, at the point that the ink in an ink cartridge IC is held in the shape of an airtight, and a quality of printed character can be secured, usefulness is size, but if Seal E is removed, since marks remain there as a technical problem which should be improved in addition, when sticking the following seal, it cannot stick in the shape of an airtight.

[0008] Since the limitation was in the count of reuse again, it suited making reuse easy, since it says that it must process for losing marks making the count of reuse increase.

[0009] The technical-problem point which is going to solve the 1st of this invention is offering what can be re-filled up with an ink cartridge quickly and simply.

[0010] Since the technical-problem point which is going to solve the 2nd of this invention does not have to carry out exfoliation processing of the used body of a seal, it can regenerate an ink cartridge by the clean condition and little down stream processing.

[0011] By piling up and sticking an intact seal, the technical-problem point which is going to solve the 3rd of this invention can carry out learning of the count of reuse of an ink cartridge only by detecting the number of sheets of a seal, and is offering what has large usefulness.

[0012] The technical-problem point which is going to solve the 4th of this invention is offering what can reduce sharply the cost which regeneration of an ink cartridge takes.

[0013]

[Means for Solving the Problem] The following point is mentioned as aforementioned The means for solving a technical problem.

[0014] (1) The ink cartridge in the printer which stuck the closure sheet for playback on the lid so that it might be the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, the closure sheet which covers the field of said letter slot of meandering in said ink injected hole list, and remains on a lid might be covered and an atmospheric-air free passage slot could be closed in an ink injected hole list at least.

[0015] (2) The above whose closure of said letter slot of meandering said closure sheet for playback enabled (1) Ink cartridge in the printer of a publication etc.

[0016] (3) said closure sheet for playback -- the ink injected hole and the letter slot of meandering on the lid -- the shape of the closure -- a wrap -- the principal piece made into the dimension [ like ], and said atmospheric-air free passage slot -- the shape of the closure -- a wrap -- the above (1) which continued by the fracture section and was constituted possible [ attachment on a lid ] in the subsection which was made into the dimension [ like ], stripped off and was made possible Or (2) Written ink cartridge.

[0017] (4) The principal piece which can be stuck on a lid so that said closure sheet for playback may be equipped with the transparent window section which makes only the atmospheric-air free passage slot following the letter slot of meandering formed in said lid expose and can close the periphery side of a lid, The above which consisted of the subsections which stuck on said principal piece, lengthened, removed, and were made possible so that said transparent window section might be covered and said atmospheric-air free passage slot could be closed (1) Or (2) Ink cartridge of a publication.

[0018] (5) While establishing the hole for ink restoration in the location which said closure sheet for playback adjusts in the ink injected hole established to the lid The above which consisted of the 1st sheet section which was equipped with the transparent window section which makes only

said atmospheric-air free passage slot expose, and was constituted possible [ attachment on a lid ], and the 2nd sheet section in which a part for said hole for ink restoration and said transparent window is stuck by the 1st sheet section of the method above of a wrap, and it deals (1) Or (2) Ink cartridge of a publication.

[0019] (6) The above which the 1st sheet section of said closure sheet for playback is formed with plastic material, and it comes to stick on a lid beforehand (5) Ink cartridge of a publication.

[0020] (7) The above constituted so that it might differ from the appearance of the used closure sheet with which the appearance of said closure sheet for playback remains on a lid (1) Or (2) or (4) Ink cartridge of a publication.

[0021] (8) The above with which the color of said closure sheet for playback was constituted in the shape of unique to the color of the used closure sheet which remains on a lid (1) Ink cartridge of a publication.

[0022] (9) The above constituted so that the appearance of said closure sheet for playback might be larger than the appearance of the used closure sheet which remains on a lid and might cover this residual sheet completely (1) Or (7) Ink cartridge of a publication.

[0023] (10) The closure sheet for ink cartridges in the printer which can stick on a lid so that the closure sheet which is a closure sheet which enabled regeneration of the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, covers the field of said letter slot of meandering in said ink injected-hole list, and remains on a lid covers and an atmospheric-air free passage slot may close in an ink injected-hole list at least.

[0024]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained based on a drawing.

[0025] (Gestalt 1 of operation) As shown in drawing 1 , on the lid LI of the used ink cartridge IC which lacked ink Body E1 of the seal E it was indicated by said point \*\* that covered the ink injected hole IP Since it remains The body E1 concerned It is the body E1 of said seal E by said principal piece 10 of the closure sheet 1 to which it has the principal piece 10 a little with the large dimension, and the subsection 30 was connected through the fracture section 20. While making it cover completely As the atmospheric-air free passage slot D is covered by the subsection 30, by the 1st jointing 50 of the letter of envelopment, attachment of the closure sheet 1 concerned on said lid LI is enabled by making not only the ink injected hole IP but the atmospheric-air free passage slot D into the shape of an airtight.

[0026] Therefore, it is the body E1 of the seal E which remains on Lid LI in case a used ink cartridge is reused. As it breaks through, if the closure sheet 1 is stuck on Lid LI as shown in drawing 1 using the 1st jointing 50 after keeping carrying out the thorn of the ink impregnation implement IS as shown in drawing 9 and filling it up in the porous body PR in an ink cartridge IC, regeneration of an ink cartridge IC will be completed.

[0027] in addition, the seal E stuck on last time about the closure sheet 1 -- a little -- a dimension -- or since what differs in color etc. is stuck in piles, the count of regeneration of the ink cartridge IC concerned can check easily by detecting the closure sheet 1 stuck [ was piled up and ] and carried out.

[0028] Moreover, in order to pile up the large closure sheet 1 of an appearance so that Seal E may be covered, and to stick it by jointing 50 from the seal E stuck on last time, it is prevented that ink is revealed from the level difference section of the boundary of Seal E and Lid LI.

[0029] (Gestalt 2-1 of operation) Closure sheet 1B shown in drawing 3 and drawing 4 Part I 11

of the configuration in which it is the dimension configuration which can cover the lid LI of an ink cartridge IC over the whole surface, the atmospheric-air free passage slot D is exposed from the transparent window section 11a, and it deals, It is stuck on said part I 11, lengthen and remove, and it consists of possible part II 12 so that said atmospheric-air free passage slot D may be covered. As part I 11 is stuck on Lid LI as the whole lid LI surface is closed by the 4th jointing 53, and the atmospheric-air free passage slot D is closed by the 5th jointing 54, part II 12 can be stuck on part I 11.

[0030] Therefore, body E1 of Seal E Since closure seal 1B is made to put while it had been made to remain, after the airtight condition of an ink cartridge IC is held at insurance and lengthens and removes part II 12 from part I 11 in use, a printer is loaded with it, and it enables supply of ink.

[0031] (Gestalt 2-2 of operation) In case the refill of the ink cartridge IC of the condition of drawing 3 is further carried out over again and again, closure sheet 1A shown in drawing 2 is stuck.

[0032] Although closure sheet 1A shown in drawing 2 is common in the shape of the closure sheet 1 and an appearance of a gestalt 1 of the aforementioned operation The 2nd and 3rd jointing 51 and 52 is equipped with the description. To principal piece 10A The 2nd jointing 51 which closes the periphery of the ink injected hole IP is formed. Further to the subsection 30A Regeneration of an ink cartridge IC is completed only by arranging in independent the 3rd jointing 52 which closes the periphery of the atmospheric-air free passage slot D, respectively, and sticking on the lid LI of the ink cartridge IC shown in drawing 3 .

[0033] (Gestalt 3 of operation) What is shown in drawing 5 is closure sheet 1C formed with plastic material etc., forms the transparent window section 17 which makes the hole 16 for ink restoration, and the atmospheric-air free passage slot D expose, and can stick the closure sheet 1 as shown in the top face at drawing 1 or drawing 2 , or 1A in piles.

[0034] Therefore, body E1 of the sheet E on the lid LI of the used ink cartridge IC After sticking the closure sheet 1C concerned so that the whole surface of Lid LI and the circumference of the ink restoration hole 16 may be closed by the 6th jointing 55 upwards, ink is poured in and it makes as [ cover / by said closure sheet 1 or 1A / after that ].

[0035] In addition, if what stuck closure sheet 1C which consists of a sheet plastic beforehand by the 7th jointing 56 on the lid LI of the intact ink cartridge IC is prepared as refill processing is predicted and it is shown in drawing 6 , the activity which sticks closure sheet 1C in the time of refill processing will be excluded, regeneration of the recovery ink cartridge IC will be simplified further, and it will get.

[0036] In addition, even if it is not limited to the adhesion technique using heat or a solvent and makes it make adhesives adhere if needed about the above mentioned 1st - the 7th jointing 50-56, it is needless to say that the same result is obtained.

[0037]

[Effect of the Invention] According to the closure sheet of this invention explained above, the following effectiveness is expectable.

[0038] \*\* By sticking a closure sheet, a quick and used ink cartridge can be regenerated simply.

[0039] \*\* It is not necessary to exfoliate the closure sheet which remains from a used ink cartridge, and regeneration of an ink cartridge can be achieved effectively.

[0040] \*\* The ink in an ink cartridge can be safely held in the shape of an airtight with a closure sheet.

[0041] \*\* With a closure sheet, an ink cartridge can be regenerated in the shape of low cost.

[0042] \*\* Since it sticks in the pile of a closure sheet and learning of the count of reuse of an ink cartridge can be carried out according to a condition, practicality is large.

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## TECHNICAL FIELD

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[Field of the Invention] This invention belongs to the technical field of the ink cartridge whose reuse was re-filled up with ink fresh to used ink cartridges, such as an ink jet printer, and was enabled.

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## PRIOR ART

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[Description of the Prior Art] Various kinds of originality and creativity for the importance of carrying out disposal of the used ink cartridge immediately in this kind of technical field not only being improving also from a viewpoint of a deployment of a resource, but it collecting the ink cartridges concerned from becoming the factor of environmental pollution, and it aiming at reuse being recognized widely, being conventionally, re-filled up with ink, and making reuse possible are proposed.

[0003] By the way, in the conventional ink cartridge, since holding so that air bubbles may not mix by the shape of a high airtight, in order to prevent leakage of the built-in ink and evaporation and to maintain whenever [ necessary degassing ] secures the quality of printed character by the printer, it is indispensable.

[0004] As an example of invention proposed in order to respond to the aforementioned request, Japanese Patent Application No. No. 119289 [ seven to ] is mentioned.

[0005] If it is in invention of this point \*\*, the ink inlet B established to Lid A as shown in drawing 7 thru/or drawing 9 is made to follow the atmospheric-air free passage slot D through the winding slot C. As the front face is covered with Seal E, ink is made to hold in the shape of an airtight, and in said seal E, it is a body E1. The continuing constriction section E2 It minds and is the tongue-shaped piece E3 which can exfoliate. It considers as the configuration formed successively.

[0006] therefore, in order to be reuse at the time of all being consumed in the ink in the ink cartridge IC concerned Body E1 of the seal E which remains on Lid A After making it exfoliate from Lid A (refer to drawing 8 ), Fresh ink is poured in into an ink cartridge IC with the ink impregnation implement IS from the ink injected hole B. Although re-restoration processing will be performed with the help of an extract operation of the ink from the extract needle IE, the intact seal E will be stuck on Lid A (refer to drawing 9 ) and reuse of an ink cartridge IC will be aimed at if the need is accepted If in charge of the use, it is the aforementioned tongue-shaped piece E3. It was made to exfoliate, the ink from an ink cartridge IC can be supplied to a printer, and ink was that in which it is always held in the shape of an airtight, and deals.



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## EFFECT OF THE INVENTION

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[Effect of the Invention] According to the closure sheet of this invention explained above, the following effectiveness is expectable.

[0038] \*\* By sticking a closure sheet, a quick and used ink cartridge can be regenerated simply.

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[0042] \*\* Since it sticks in the pile of a closure sheet and learning of the count of reuse of an ink cartridge can be carried out according to a condition, practicality is large.

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] If it is in invention of point \*\* like the above, at the point that the ink in an ink cartridge IC is held in the shape of an airtight, and a quality of printed character can be secured, usefulness is size, but if Seal E is removed, since marks remain there as a technical problem which should be improved in addition, when sticking the following seal, it cannot stick in the shape of an airtight.

[0008] Since the limitation was in the count of reuse again, it suited making reuse easy, since it says that it must process for losing marks, making the count of reuse increase.

[0009] The technical-problem point which is going to solve the 1st of this invention is offering what can be re-filled up with an ink cartridge quickly and simply.

[0010] Since the technical-problem point which is going to solve the 2nd of this invention does not have to carry out exfoliation processing of the used body of a seal, it can regenerate an ink cartridge by the clean condition and little down stream processing.

[0011] By piling up and sticking an intact seal, the technical-problem point which is going to solve the 3rd of this invention can carry out learning of the count of reuse of an ink cartridge only by detecting the number of sheets of a seal, and is offering what has large usefulness.

[0012] The technical-problem point which is going to solve the 4th of this invention is offering what can reduce sharply the cost which regeneration of an ink cartridge takes.

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## MEANS

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[Means for Solving the Problem] The following point is mentioned as aforementioned The means for solving a technical problem.

[0014] (1) The ink cartridge in the printer which stuck the closure sheet for playback on the lid so that it might be the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, the closure sheet which covers the field of said letter slot of meandering in said ink injected hole list, and remains on a lid might be covered and an

atmospheric-air free passage slot could be closed in an ink injected hole list at least.

[0015] (2) The above whose closure of said letter slot of meandering said closure sheet for playback enabled (1) Ink cartridge in the printer of a publication etc.

[0016] (3) said closure sheet for playback -- the ink injected hole and the letter slot of meandering on the lid -- the shape of the closure -- a wrap -- the principal piece made into the dimension [ like ], and said atmospheric-air free passage slot -- the shape of the closure -- a wrap -- the above (1) which continued by the fracture section and was constituted possible [ attachment on a lid ] in the subsection which was made into the dimension [ like ], stripped off and was made possible Or (2) Written ink cartridge.

[0017] (4) The principal piece which can be stuck on a lid so that said closure sheet for playback may be equipped with the transparent window section which makes only the atmospheric-air free passage slot following the letter slot of meandering formed in said lid expose and can close the periphery side of a lid, The above which consisted of the subsections which stuck on said principal piece, lengthened, removed, and were made possible so that said transparent window section might be covered and said atmospheric-air free passage slot could be closed (1) Or (2) Ink cartridge of a publication.

[0018] (5) While establishing the hole for ink restoration in the location which said closure sheet for playback adjusts in the ink injected hole established to the lid The above which consisted of the 1st sheet section which was equipped with the transparent window section which makes only said atmospheric-air free passage slot expose, and was constituted possible [ attachment on a lid ], and the 2nd sheet section in which a part for said hole for ink restoration and said transparent window is stuck by the 1st sheet section of the method above of a wrap, and it deals (1) Or (2) Ink cartridge of a publication.

[0019] (6) The above which the 1st sheet section of said closure sheet for playback is formed with plastic material, and it comes to stick on a lid beforehand (5) Ink cartridge of a publication.

[0020] (7) The above constituted so that it might differ from the appearance of the used closure sheet with which the appearance of said closure sheet for playback remains on a lid (1) Or (2) or (4) Ink cartridge of a publication.

[0021] (8) The above with which the color of said closure sheet for playback was constituted in the shape of unique to the color of the used closure sheet which remains on a lid (1) Ink cartridge of a publication.

[0022] (9) The above constituted so that the appearance of said closure sheet for playback might be larger than the appearance of the used closure sheet which remains on a lid and might cover this residual sheet completely (1) Or (7) Ink cartridge of a publication.

[0023] (10) The closure sheet for ink cartridges in the printer which can stick on a lid so that the closure sheet which is a closure sheet which enabled regeneration of the refreshable ink cartridge which equipped with the atmospheric-air free passage slot the letter slot list of meandering which is open for free passage to the ink injected hole established to the lid, covers the field of said letter slot of meandering in said ink injected-hole list, and remains on a lid covers and an atmospheric-air free passage slot may close in an ink injected-hole list at least.

[0024]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained based on a drawing.

[0025] (Gestalt 1 of operation) As shown in drawing 1 , on the lid LI of the used ink cartridge IC which lacked ink Body E1 of the seal E it was indicated by said point \*\* that covered the ink injected hole IP Since it remains The body E1 concerned It is the body E1 of said seal E by said

principal piece 10 of the closure sheet 1 to which it has the principal piece 10 a little with the large dimension, and the subsection 30 was connected through the fracture section 20. While making it cover completely As the atmospheric-air free passage slot D is covered by the subsection 30, by the 1st jointing 50 of the letter of envelopment, attachment of the closure sheet 1 concerned on said lid LI is enabled by making not only the ink injected hole IP but the atmospheric-air free passage slot D into the shape of an airtight.

[0026] Therefore, it is the body E1 of the seal E which remains on Lid LI in case a used ink cartridge is reused. As it breaks through, if the closure sheet 1 is stuck on Lid LI as shown in drawing 1 using the 1st jointing 50 after keeping carrying out the thorn of the ink impregnation implement IS as shown in drawing 9 and filling it up in the porous body PR in an ink cartridge IC, regeneration of an ink cartridge IC will be completed.

[0027] in addition, the seal E stuck on last time about the closure sheet 1 -- a little -- a dimension -- or since what differs in color etc. is stuck in piles, the count of regeneration of the ink cartridge IC concerned can check easily by detecting the closure sheet 1 stuck [ was piled up and ] and carried out.

[0028] Moreover, in order to pile up the large closure sheet 1 of an appearance so that Seal E may be covered, and to stick it by jointing 50 from the seal E stuck on last time, it is prevented that ink is revealed from the level difference section of the boundary of Seal E and Lid LI.

[0029] (Gestalt 2-1 of operation) Closure sheet 1B shown in drawing 3 and drawing 4 Part I 11 of the configuration in which it is the dimension configuration which can cover the lid LI of an ink cartridge IC over the whole surface, the atmospheric-air free passage slot D is exposed from the transparent window section 11a, and it deals, It is stuck on said part I 11, lengthen and remove, and it consists of possible part II 12 so that said atmospheric-air free passage slot D may be covered. As part I 11 is stuck on Lid LI as the whole lid LI surface is closed by the 4th jointing 53, and the atmospheric-air free passage slot D is closed by the 5th jointing 54, part II 12 can be stuck on part I 11.

[0030] Therefore, body E1 of Seal E Since closure seal 1B is made to put while it had been made to remain, after the airtight condition of an ink cartridge IC is held at insurance and lengthens and removes part II 12 from part I 11 in use, a printer is loaded with it, and it enables supply of ink.

[0031] (Gestalt 2-2 of operation) In case the refill of the ink cartridge IC of the condition of drawing 3 is further carried out over again and again, closure sheet 1A shown in drawing 2 is stuck.

[0032] Although closure sheet 1A shown in drawing 2 is common in the shape of the closure sheet 1 and an appearance of a gestalt 1 of the aforementioned operation The 2nd and 3rd jointing 51 and 52 is equipped with the description. To principal piece 10A The 2nd jointing 51 which closes the periphery of the ink injected hole IP is formed. Further to the subsection 30A Regeneration of an ink cartridge IC is completed only by arranging in independent the 3rd jointing 52 which closes the periphery of the atmospheric-air free passage slot D, respectively, and sticking on the lid LI of the ink cartridge IC shown in drawing 3 .

[0033] (Gestalt 3 of operation) What is shown in drawing 5 is closure sheet 1C formed with plastic material etc., forms the transparent window section 17 which makes the hole 16 for ink restoration, and the atmospheric-air free passage slot D expose, and can stick the closure sheet 1 as shown in the top face at drawing 1 or drawing 2 , or 1A in piles.

[0034] Therefore, body E1 of the sheet E on the lid LI of the used ink cartridge IC After sticking the closure sheet 1C concerned so that the whole surface of Lid LI and the circumference of the

ink restoration hole 16 may be closed by the 6th jointing 55 upwards, ink is poured in and it makes as [ cover / by said closure sheet 1 or 1A / after that ].

[0035] In addition, if what stuck closure sheet 1C which consists of a sheet plastic beforehand by the 7th jointing 56 on the lid LI of the intact ink cartridge IC is prepared as refill processing is predicted and it is shown in drawing 6 , the activity which sticks closure sheet 1C in the time of refill processing will be excluded, regeneration of the recovery ink cartridge IC will be simplified further, and it will get.

[0036] In addition, even if it is not limited to the adhesion technique using heat or a solvent and makes it make adhesives adhere if needed about the above mentioned 1st - the 7th jointing 50-56, it is needless to say that the same result is obtained.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The top view of the ink cartridge equipped with the closure sheet of the gestalt 1 of operation.

[Drawing 2] The top view of the ink cartridge equipped with the closure sheet of the gestalt 2-2 of operation.

[Drawing 3] The top view of the ink cartridge which stuck part I of the closure sheet of the gestalt 2-1 of operation.

[Drawing 4] The top view of the ink cartridge which stuck part II of drawing 3 .

[Drawing 5] The top view of the ink cartridge equipped with the closure sheet of the gestalt 3 of operation.

[Drawing 6] The top view of the intact ink cartridge which stuck the closure sheet IC beforehand with the gestalt 3 of operation.

[Drawing 7] The ink cartridge of invention of point \*\* is a cutting top view a part.

[Drawing 8] The top view of the ink cartridge equipped only with the residual section of the seal of drawing 7 .

[Drawing 9] Drawing of longitudinal section showing the condition of pouring ink into an ink cartridge.

[Description of Notations]

1, 1A, 1B, 1C Closure sheet

10 10A Principal piece

20 Fracture Section

30 30A The subsection

50-56 The 1st - the 7th jointing

11 Part I

11a, 17 Transparent window section

12 Part II

16 Ink Restoration Hole

(11)特許出願公開番号

(43)公開日 平成9年(1997)9月16日

審査請求 未請求 請求項の数10 FD (全 6 頁)

(74)代理人 弁理士 岡田 和喜

【特許請求の範囲】

【請求項1】 蓋体に開設したインク注入孔に連通する蛇行状溝並びにその大気連通溝を備えた再生可能なインクカートリッジであって、前記インク注入孔並びに前記蛇行状溝の領域を覆って蓋体上に残留する封止シートを覆い、少なくともインク注入孔並びに大気連通溝を封止しうるように蓋体上に再生用封止シートを貼設したプリンタ等におけるインクカートリッジ。

【請求項2】 前記再生用封止シートが、前記蛇行状溝をも封止可能とした請求項1記載のプリンタ等におけるインクカートリッジ。

【請求項3】 前記再生用封止シートが、蓋体のインク注入孔と蛇行状溝とを封止状に覆うような外形寸法とされた主部と、前記大気連通溝を封止状に覆うような外形寸法とされ、剥ぎ取り可能とされた副部とを破断部により連続され蓋体上に貼設可能に構成された請求項1又は2記載インクカートリッジ。

【請求項4】 前記再生用封止シートが、前記蓋体形成された蛇行状溝に続く大気連通溝のみを露呈させる透窓部を備え、蓋体の外周辺を封止しうよう蓋体上に貼設しうる主部と、前記透窓部を覆って前記大気連通溝を封止しうるように前記主部上に貼設し、引き剥し可能とした副部とで構成された請求項1又は2記載のインクカートリッジ。

【請求項5】 前記再生用封止シートが、蓋体に開設したインク注入孔に整合する位置にインク充填用孔を開設すると共に、前記大気連通溝のみを露呈させる透窓部を備え、蓋体上に貼設可能に構成された第1シート部と、前記インク充填用孔並びに前記透窓分を覆うよう前記第1シート部に貼設されうる第2シート部とで構成された請求項1又は2記載のインクカートリッジ。

【請求項6】 前記再生用封止シートの第1シート部がプラスチック材料で形成され、予め蓋体上に貼設される請求項5記載のインクカートリッジ。

【請求項7】 前記再生用封止シートの外形が蓋体上に残留する使用済みの封止シートの外形と異なるように構成された請求項1又は2又は4記載のインクカートリッジ。

【請求項8】 前記再生用封止シートの色彩が蓋体上に残留する使用済みの封止シートの色彩に対して異色状に構成された請求項1記載のインクカートリッジ。

【請求項9】 前記再生用封止シートの外形が蓋体上に残留する使用済みの封止シートの外形より大きく、該残留シートを完全に被覆するように構成された請求項1又は7記載のインクカートリッジ。

【請求項10】 蓋体に開設したインク注入孔に連通する蛇行状溝並びにその大気連通溝を備えた再生可能なインクカートリッジを再生処理可能とした封止シートであって、前記インク注入孔並びに前記蛇行状溝の領域を覆って蓋体上に残留する封止シートを覆い、少なくともイ

ンク注入孔並びに大気連通溝を封止しうるように蓋体上に貼設しうるプリンタ等におけるインクカートリッジ用封止シート。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 この発明は、インクジェットプリンタなどの使用済みのインクカートリッジに新鮮なインクを再充填して再利用可能としたインクカートリッジの技術分野に属するものである。

【0002】

【従来の技術】 従来、この種の技術分野において、使用済みのインクカートリッジを直ちに廃棄処分することは、資源の有効利用の観点からも見直されるべきであるばかりでなく、環境汚染の要因となることから当該インクカートリッジを回収して再利用を図ることの重要性が広く認識され、インクを再充填して再利用可能とするための各種の創意工夫が提案されている。

【0003】 ところで、従来のインクカートリッジにおいては、内蔵されたインクの漏洩、蒸発を防止し、所要の脱気度を維持するために高気密状で気泡が混入しないように保持しておくことがプリンタによる印字品質を保障するために不可欠である。

【0004】 前記の要請に応えるために提案された発明の一例として、特願平7-119289号が挙げられる。

【0005】 この先願の発明にあっては、図7乃至図9に示すように蓋体Aに開設したインク注入口Bを蛇行した溝Cを介して大気連通溝Dに連続させており、その表面をシールEで覆うようにしてインクを気密状に保持させたものであり、前記シールEには、本体E1に続く括れ部E2を介して剥離可能な舌片E3を連設した構成とされたものである。

【0006】 従って、当該インクカートリッジIC内のインクが消費され尽くされた際の再利用のためには、蓋体A上に残留するシールEの本体E1を蓋体Aから剥離させた後（図8参照）、インク注入口Bからインク注入具ISにより新鮮なインクをインクカートリッジIC内に注入し、必要に応じて抽出針IEからのインクの抽出作用の支援の下に再充填処理を行うものであり（図9参照）、未使用のシールEを蓋体A上に貼設してインクカートリッジICの再利用を図ることとなるが、その使用に当たっては、前記の舌片E3を剥脱させてインクカートリッジICからのインクをプリンタに供給しうるものであって、インクは、常時気密状に保持されうるものであった。

【0007】

【発明が解決しようとする課題】 前記の如く先願の発明にあっては、インクカートリッジIC内のインクを気密状に保持し、印字品質を保障しうる点では有用性が大であるが、尚改善すべき課題としては、シールEを剥す

と、そこに痕が残っているので次のシールを貼る時に気密状に貼れない。

【0008】痕をなくすための処理をしなければならぬということから再利用を容易にすることと、又再生利用回数に限りがあるので再利用回数を増加させることにあった。

【0009】この発明の第1の解決しようとする課題点は、迅速且つ簡易にインクカートリッジを再充填しうるものを提供することである。

【0010】この発明の第2の解決しようとする課題点は、使用済みのシール本体を剥脱処理する必要がないため、清潔状態且つ少ない処理工程でインクカートリッジを再生処理しうるものである。

【0011】この発明の第3の解決しようとする課題点は、未使用のシールを重ね貼設することにより、シールの枚数を検出するだけでインクカートリッジの再利用回数を知得しうるものであって、有用性が大きいものを提供することである。

【0012】この発明の第4の解決しようとする課題点は、インクカートリッジの再生処理に要するコストを大巾に低減しうるものを提供することである。

【0013】

【課題を解決するための手段】前記の課題を解決するための手段としては、次の点が挙げられる。

【0014】(1) 蓋体に開設したインク注入孔に連通する蛇行状溝並びにその大気連通溝を備えた再生可能なインクカートリッジであって、前記インク注入孔並びに前記蛇行状溝の領域を覆って蓋体上に残留する封止シートを覆い、少なくともインク注入孔並びに大気連通溝を封止しうるように蓋体上に再生用封止シートを貼設したプリンタ等におけるインクカートリッジ。

【0015】(2) 前記再生用封止シートが、前記蛇行状溝をも封止可能とした前記(1)記載のプリンタ等におけるインクカートリッジ。

【0016】(3) 前記再生用封止シートが、蓋体のインク注入孔と蛇行状溝とを封止状に覆うような外形寸法とされた主部と、前記大気連通溝を封止状に覆うような外形寸法とされ、剥ぎ取り可能とされた副部とを破断部により連続され蓋体上に貼設可能に構成された前記(1)又は(2)記載インクカートリッジ。

【0017】(4) 前記再生用封止シートが、前記蓋体に形成された蛇行状溝に続く大気連通溝のみを露呈させる透窓部を備え、蓋体の外周辺を封止しうよう蓋体上に貼設しうる主部と、前記透窓部を覆って前記大気連通溝を封止しうるように前記主部上に貼設し、引き剥し可能とした副部とで構成された前記(1)又は(2)記載のインクカートリッジ。

【0018】(5) 前記再生用封止シートが、蓋体に開設したインク注入孔に整合する位置にインク充填用孔を開設すると共に、前記大気連通溝のみを露呈させる透窓部

を備え、蓋体上に貼設可能に構成された第1シート部と、前記インク充填用孔並びに前記透窓分を覆うよう前記第1シート部に貼設されうる第2シート部とで構成された前記(1)又は(2)記載のインクカートリッジ。

【0019】(6) 前記再生用封止シートの第1シート部がプラスチック材料で形成され、予め蓋体上に貼設されてなる前記(5)記載のインクカートリッジ。

【0020】(7) 前記再生用封止シートの外形が蓋体上に残留する使用済みの封止シートの外形と異なるように構成された前記(1)又は(2)又は(4)記載のインクカートリッジ。

【0021】(8) 前記再生用封止シートの色彩が蓋体上に残留する使用済みの封止シートの色彩に対して異色状に構成された前記(1)記載のインクカートリッジ。

【0022】(9) 前記再生用封止シートの外形が蓋体上に残留する使用済みの封止シートの外形より大きく、該残留シートを完全に被覆するように構成された前記(1)又は(7)記載のインクカートリッジ。

【0023】(10) 蓋体に開設したインク注入孔に連通する蛇行状溝並びにその大気連通溝を備えた再生可能なインクカートリッジを再生処理可能とした封止シートであって、前記インク注入孔並びに前記蛇行状溝の領域を覆って蓋体上に残留する封止シートを覆い、少なくともインク注入孔並びに大気連通溝を封止しうるように蓋体上に貼設しうるプリンタ等におけるインクカートリッジ用封止シート。

【0024】

【発明の実施の形態】以下、図面に基いて、この発明の実施の形態を説明する。

【0025】(実施の形態1) 図1に示すように、インクが欠如した使用済みのインクカートリッジICの蓋体LI上には、インク注入孔IPを覆うように前記先願で示したシールEの本体E1が残留されているので、当該本体E1よりも幾分その外形寸法が大きい主部10を有し、破断部20を介して副部30を接続させた封止シート1の前記主部10により、前記シールEの本体E1を完全に被覆するようにすると共に、副部30によって大気連通溝Dを覆うようにして包囲状の第1接着部50により、インク注入孔IPのみならず、大気連通溝Dを気密状として当該封止シート1を前記蓋体LI上に貼設可能としたものである。

【0026】従って、使用済みのインクカートリッジを再利用する際は、蓋体LI上に残存しているシールEの本体E1を突き破るようにして、図9に示すようなインク注入具ISをインクカートリッジIC内の多孔質体PR内に挿し通して補充した後、第1接着部50を利用して図1に示すように封止シート1を蓋体LI上に貼設すれば、インクカートリッジICの再生処理が完了するものである。

【0027】尚、封止シート1については、前回到貼設

されたシールEとは幾分寸法をもしくは色彩などを異にするものを重ねて貼設するものであるから、重ね貼りされた封止シート1を検知することによって容易に当該インクカートリッジICの再生処理回数が確認しうるものである。

【0028】又、前回に貼設されたシールEよりも外形の大きい封止シート1をシールEを被覆するように重ね、接着部50により貼設するためシールEと蓋体LIとの境界の段差部からインクが漏洩することが防止される。

【0029】（実施の形態2-1）図3及び図4に示す封止シート1Bは、インクカートリッジICの蓋体LIを全面にわたって覆うことが出来る寸法形状であって、その透窓部11aから大気連通溝Dのみが露呈されうる形状の第1部11と、前記大気連通溝Dを覆い隠すように前記第1部11上に貼設される引き剥し可能な第2部12とからなり、第4接着部53により蓋体LI全面を封止するようにして第1部11を蓋体LI上に貼着し、又、第5接着部54により大気連通溝Dを封止するようにして第2部12を第1部11上に貼設しうるものである。

【0030】従って、シールEの本体E1を残留させたままに封止シート1Bを被着させるものであるからインクカートリッジICの気密状態は安全に保持されるものであり、使用に当たっては、第2部12を第1部11から引き剥した後にプリンタに装填し、インクを供給可能としたものである。

【0031】（実施の形態2-2）図3の状態のインクカートリッジICを更に再三にわたってリフィルする際は、図2に示す封止シート1Aを貼設する。

【0032】図2に示す封止シート1Aは、前記の実施の形態1の封止シート1と外形形状において共通しているが、その第2、第3接着部51、52に特徴を備えており、その主部10Aには、インク注入孔IPの外周を封止する第2接着部51を設け、更に、その副部30Aには、大気連通溝Dの外周を封止する第3接着部52をそれぞれ独立的に配設したものであって、図3に示すインクカートリッジICの蓋体LI上に貼設するだけでインクカートリッジICの再生処理が完了するものである。

【0033】（実施の形態3）図5に示すものは、プラスチック材料などで形成された封止シート1Cであって、インク充填用孔16及び大気連通溝Dを露呈させる透窓部17を形成したものであり、その上面に図1又は図2に示すような封止シート1又は1Aを重ねて貼着しうるものである。

【0034】従って、使用済みのインクカートリッジICの蓋体LI上のシートEの本体E1の上に第6接着部55により蓋体LIの全面及びインク充填孔16の周辺を封止するように当該封止シート1Cを貼設した後、インクを注入し、その後、前記封止シート1又は1Aによ

り覆うようになしたものである。

【0035】尚、リフィル処理を予測して図6に示すように、未使用のインクカートリッジICの蓋体LI上に予めプラスチックシートからなる封止シート1Cを第7接着部56により貼設したものを準備しておけば、リフィル処理の際に当たって封止シート1Cを貼設する作業が省かれることとなり、一層回収インクカートリッジICの再生処理が簡易化されうるものである。

【0036】尚、前記した第1～第7の接着部50～56については、熱もしくは溶剤を利用した接着手法に限定されるものではなく、必要に応じて接着剤を付着させるようにしても同様の結果が得られることは言うまでもないことである。

【0037】

【発明の効果】以上説明したこの発明の封止シートによれば、次のような効果を期待出来るものである。

【0038】① 封止シートを貼設することにより、迅速且つ簡易に使用済みのインクカートリッジを再生処理することが出来る。

【0039】② 使用済みのインクカートリッジから残留する封止シートを剥脱する必要がなく、効果的にインクカートリッジの再生処理を果たすことが出来る。

【0040】③ 封止シートによりインクカートリッジ内のインクを安全に気密状に保持することが出来る。

【0041】④ 封止シートにより、低コスト状にインクカートリッジを再生処理することが出来る。

【0042】⑤ 封止シートの重ね貼り状態によりインクカートリッジの再生利用回数を知得出来るので実用性が大きい。

【図面の簡単な説明】

【図1】実施の形態1の封止シートを備えたインクカートリッジの平面図。

【図2】実施の形態2-2の封止シートを備えたインクカートリッジの平面図。

【図3】実施の形態2-1の封止シートの第1部を貼設したインクカートリッジの平面図。

【図4】図3の第2部を貼設したインクカートリッジの平面図。

【図5】実施の形態3の封止シートを備えたインクカートリッジの平面図。

【図6】実施の形態3で予め封止シートICを貼設した未使用のインクカートリッジの平面図。

【図7】先願の発明のインクカートリッジの一部切断面図。

【図8】図7のシールの残留部のみを備えたインクカートリッジの平面図。

【図9】インクカートリッジにインクを注入する状態を示す縦断面図。

【符号の説明】

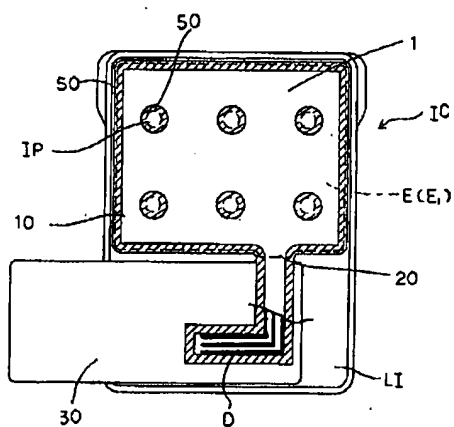
1、1A、1B、1C 封止シート



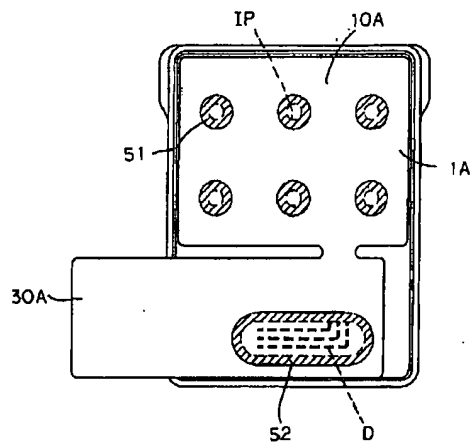
10、10A                    主部  
 20                        破断部  
 30、30A                副部  
 50～56                第1～第7 接着部

11                        第1部  
 11a、17                透窓部  
 12                        第2部  
 16                        インク充填孔

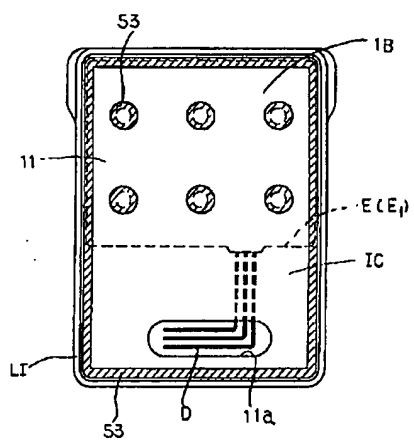
【図1】



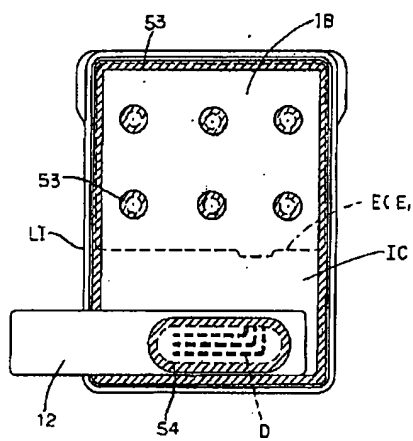
【図2】



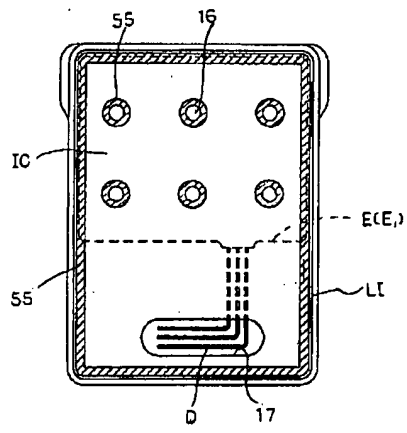
【図3】



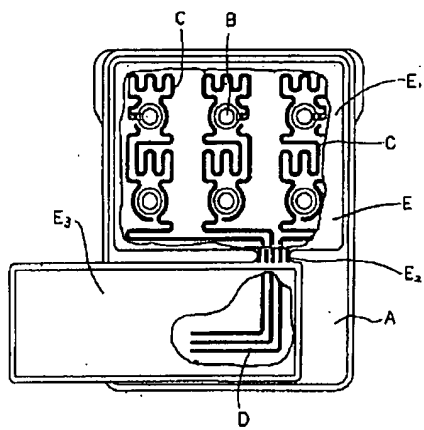
【図4】



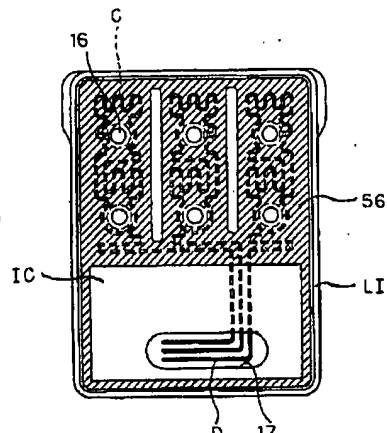
【図5】



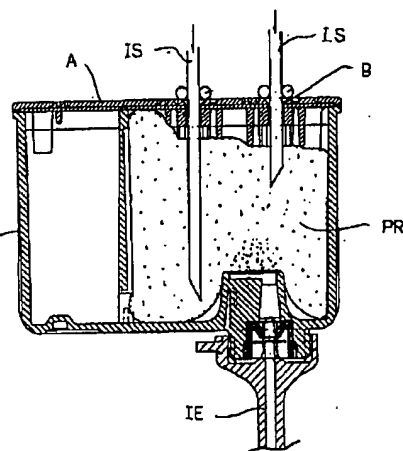
【図7】



【図6】



【図9】



【図8】

